ENGELMANN SPRUCE BEETLE CONDITIONS
MANTI-LA SAL NATIONAL FOREST AND ADJOINING LANDS
APPRAISAL SURVEY
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By
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Introduction

The Engelmann spruce beetle, Dendroctonus engelmanni Hopk., has been developing in logging slash and windthrows in the mature Engelmann spruce stand on the east side of Mt. Peale in southeastern Utah for the last three or four years. By the fall of 1957 the beetle population had increased to a point that down and weakened material could no longer absorb all the beetle population and, consequently, large numbers of standing spruce were successfully attacked. The presence of the spruce beetle in epidemic numbers was detected and reported by State land board employees through the State Board of Forestry and Fire Control. The infestation occurs on the Manti-LaSal National Forest, State of Utah, and privately-owned lands.

On July 14 and 15 a joint inspection of the area was made by entomologists R. I. Washburn and J. A. E. Knopf; Bill Hart, Utah Deputy State Forester; and Ranger Bob Terrill, Manti-LaSal National Forest.

Survey Method

Monday, July 14, was devoted to a ground appraisal of the situation. Information was gathered on the severity of the infestation, probable cause of the buildup, bark beetle brood density, and development, and incidence of natural control factors. Data on the approximate ratio of infested trees visible from the air against total infested were also collected.

During the morning of July 15, aerial observations were made to delineate the infested area and to produce a rough estimate of the number and intensity of the currently infested trees.

Results

Observations confirmed that an epidemic infestation of Engelmann spruce beetle was active on parts of sections 7, 8, 21, and 22, R. 25 E. T. 27 S., and sections 12, 13, R. 24 E., T. 27 S. which is approximately 20 air miles southeast of Moab, Utah. The infestation extends over about 1,000 acres and contains an estimated 7,000 infested trees. Approximately

6,000 of these are located in Dark Canyon, extending from the head of the canyon to just below Dark Canyon Lake, with the remainder appearing primarily in large groups extending northward to Geyser Pass. The infested area includes private, State, and Federal lands. Federal lands are part of the Manti-LaSal National Forest.

Timber in the infested area is primarily pure mature spruce growing in heavily stocked even-aged stands. Even though the stand is basically even-aged a great variety exists in diameter classes probably as a result of competition in the dense stands.

Biologically, the examination showed the following:

1. In all probability both 1- and 2-year generation strains of the beetle are present.

2. The stage of brood development varied by trees. In general the infested trees contained half-grown to mature larvae or were filled with pupae and callow adults. There were some trees, however, that contained all stages from eggs through callow adults.

3. The majority of the overwintering adults had emerged and attacked new trees. In most cases egg deposition was nearly complete.

4. The average length of the new parent galleries were around 6 inches and contained about 35 eggs per inch of gallery. In arriving at this figure 1 inch was subtracted from the total length of the gallery to compensate for the lower portion of the crook on which the eggs were laid.

5. Roughly 20 percent of the trees now infested were attacked this spring.

6. A few large trees with thin bark were located that contained moderate to heavy populations of a parasitic wasp of the genus Coeloides. Counts were made of 4- x 4-inch bark samples and 3 - 5 cocoons were found per sample. These were in the pupal stage.

7. Some woodpecker activity was noted and a few trees observed that had been heavily woodpeckered. However, it was estimated that woodpeckers had worked on less than 5 percent of the infested trees.

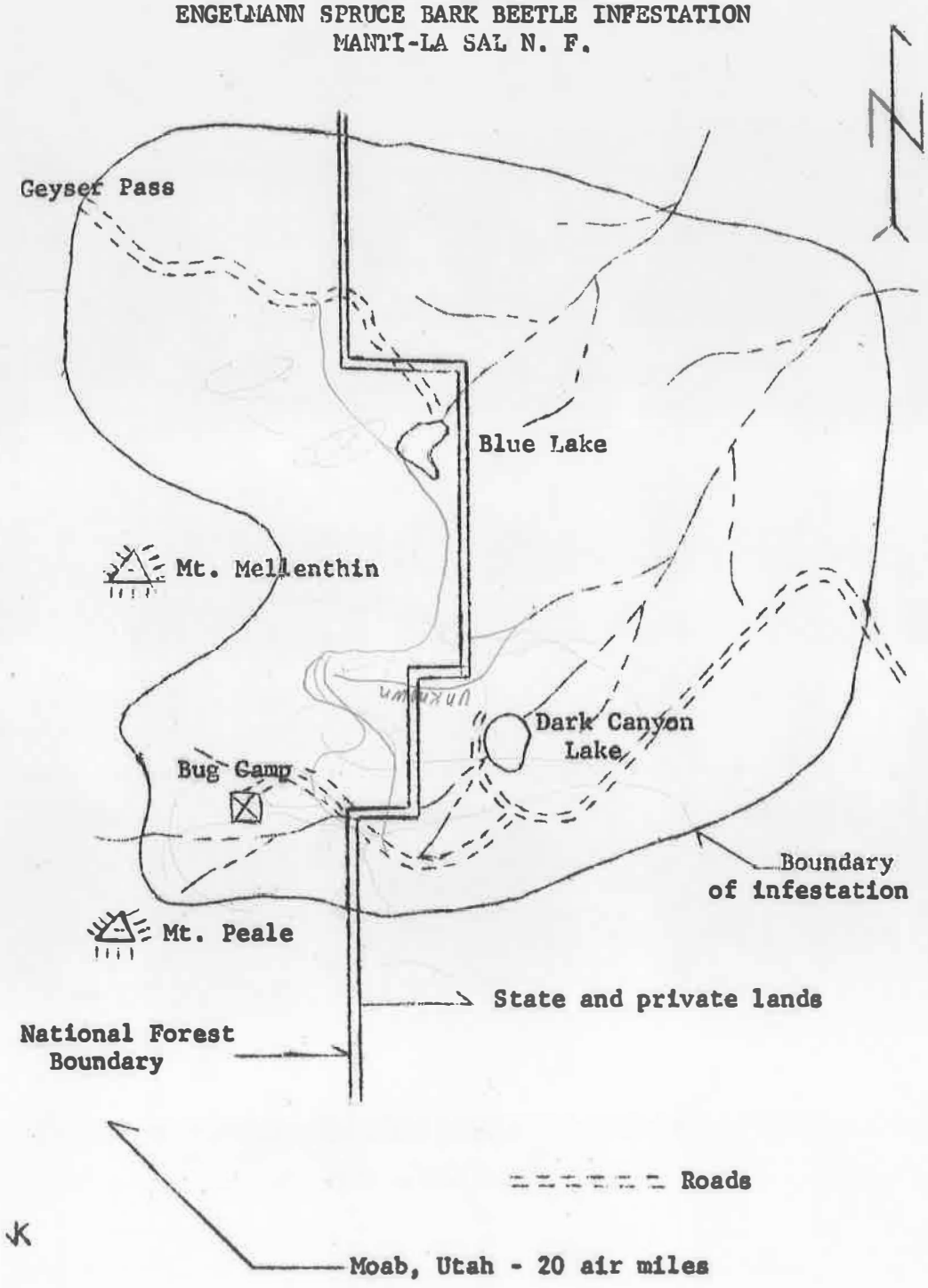
Discussion and Recommendations

Preliminary surveys in the Mt.Peale, Dark Canyon region indicate that Engelmann spruce beetles have built up to epidemic proportions from logging slash and scattered windthrow. Present populations are not "new" but have occurred as a result of several years' gradual accumulative buildup. The fact that this is not a new infestation is evidenced by relatively well established populations of predators and parasites. Also, many old standing trees were noted throughout the infested area and a close check of these revealed that they had supported large populations of Engelmann spruce beetle in the past.

Control of the Engelmann spruce beetle in this area would involve work on Federal, State, and private lands. At present, National Forest personnel are actively engaged in spotting and marking infested spruce stands for logging. Control of the Engelmann spruce beetle can be effected by logging infested material or by the direct application of a toxic chemical such as ethylene dibromide. Control measures can be expedited by combining logging and treating practices.

It is highly desirable to reduce Engelmann spruce beetle populations as rapidly as possible when they occur in epidemic numbers. Such is the case on the Manti-LaSal where the present epidemic is serious and could readily spread to spruce stands on the western approaches of Mt. Peale and Mt. Mellenthin.

DIAGRAMMATIC MAP OF
ENGELMANN SPRUCE BARK BEETLE INFESTATION
MANTI-LA SAL N. F.



Not to Scale